Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Divergent Evolution - An Origin of Species Webquest**

As you investigate the activity An Origin of Species at [www.pbs.org/wgbh/evolution/darwin](http://www.pbs.org/wgbh/evolution/darwin) answer the following questions.

1. What family of birds will you study in this activity?
2. What and where did they evolve from?
3. How many species were on the islands at one time?
4. What is the name for this evolutionary process?

**Explore what Darwin called the “mystery of mysteries”.**

1. What is the “harsh reality” the pollenpeepers faced?

**Explore the pollenpeepers’ new homes. Click on the *Mainland*, and then click on**

**Competition.**

1. Describe in your own words how competition may lead to divergence.

**Click on habitat.**

1. What happens when you drop an organism in a new habitat?
2. Why are new habitats ripe with opportunity?

**Click on food.**

1. What does this site say about the importance of food on the process of evolution?
2. What impact does the availability of food have on evolution?

**Click on predators.**

1. When you take away predation pressures, you take away the limitations on how a species can evolve. Describe an example of this occurring in nature.
2. What is the evolutionary result in a predator-free environment?

At the top of the picture click on  ***Instructions*** to find out how to use all the features of this site. After reviewing the instructions click on  ***Map*** at the top of the picture. Click on a bird on the Mainland first. Click through the timeline at the bottom of the page to see how the birds on the mainland changed over the past 5 million years.

1. Describe the changes that took place between 5 million years ago (***mya***) and the present. Focus on what happens under the columns labeled competition, habitat, food, and predators.

|  |  |  |
| --- | --- | --- |
| **Mainland** | | |
| **Time Period ** | **5 mya** | **Present** |
| Competition |  |  |
| Habitat |  |  |
| Food |  |  |
| Predators |  |  |
| Sketch the beak |  |  |

**Now explore the other islands and record your findings in the chart below.**

1. Describe the changes in competition, habitat, food, and predators that happened between 5 mya and the present on each of the other three islands.

|  |  |  |
| --- | --- | --- |
| **Windsor Island** | | |
| **Time Period ** | **5 mya** | **Present** |
| Competition |  |  |
| Habitat |  |  |
| Food |  |  |
| Predators |  |  |
| Sketch the beak |  |  |

|  |  |  |
| --- | --- | --- |
| **Norcross Island** | | |
| **Time Period ** | **5 mya** | **Present** |
| Competition |  |  |
| Habitat |  |  |
| Food |  |  |
| Predators |  |  |
| Sketch the beak |  |  |

|  |  |  |
| --- | --- | --- |
| **Warwick Archipelago** | | |
| **Time Period ** | **5 mya** | **Present** |
| Competition |  |  |
| Habitat |  |  |
| Food |  |  |
| Predators |  |  |
| Sketch the beak |  |  |

**Use the following questions to write a summary of this activity. Please type this up and attach the summary to the other webquest sheets.**

* What benefits have resulted from the evolution of several pollenpeeper subspecies on each individual island?
* Reflect on your data that you have collected. What do you think has driven the changes in pollenpeepers’ beaks and colors?
* The pollenpeeper is a fictitious bird that is modeled after the Hawaiian Honeycreeper. The

Evolutionary process being modeled is called adaptive radiation. Find and describe another example of adaptive radiation and describe the changes that have occurred over time and space.